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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/995,165	11/26/2001	Jeffrey R. Thomas	ITWO:0019	9370

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EXAMINER

LEUNG, PHILIP H

ART UNIT	PAPER NUMBER
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3742

DATE MAILED: 03/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 09/995,165	Applicant(s) THOMAS ET AL.	
	Examiner Philip H Leung	Art Unit 3742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27, 37-40 and 42-50 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27, 37-40 and 42-50 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 39, 40 and 46-50 are rejected under 35 U.S.C. 102(b) as being anticipated by Rohrbaugh et al (US 5,770,838) (previously cited).

Rohrbaugh shows a system for heating a workpiece, comprising: a heating device sections 52 and 56; a power source operable to transmit power to the heating device; a controller 302 operable to control operation of the power source automatically to heat the workpiece according to a desired workpiece temperature profile, wherein the controller is operable to heat the workpiece at a first rate of temperature increase during a first portion of the workpiece temperature profile and to heat the workpiece at a second rate of temperature increase during a second portion of the workpiece temperature profile, the second rate of temperature increase being different than the first rate of temperature increase. It is agreed with applicant's argument that Rohrbaugh does not control the induction section 54 with a programmed temperature profile. However, claim 39 does not limit to an induction heating device, therefore, the heating sections 52 and 56 are the claimed heating device. As it states at col. 6, lines 43-64:

Prior to the first strip 10 entering the heating system 50, the programmable control mechanism 300 sends operating parameter signals 312 to the first and following heating sections 52 and 56 to heat the different zones in the sections to attain a first temperature profile. The first temperature profile is established by the temperatures of the combustion zones 101-112 at which the first strip 10 can exit the heating system 50 within a predetermined first temperature

Art Unit: 3742

tolerance range. Likewise, a second temperature profile enables the second strip 16 to exit the heating system 50 within a second predetermined temperature tolerance range. The temperature profiles are established in the first and following heating sections 52 and 56 and not the induction heating section 54 because first and following heating sections transfer heat to the strip and the heating section, which allow for temperature measurements in the heating sections and, therefore, a temperature profile which is indicative of the heat transfer to the strip in a specific zone. As the induction heaters heat the strip directly, the temperature in the induction section is not indicative of the amount of heat transfer to the metal strip and does not constitute a part of the temperature profiles established by the control mechanism 300.

Therefore, the heating is controlled by programming the various heating sections of the heating devices with a first temperature profile and a second temperature profile which is hotter than the first temperature profile (see col. 7, lines 31-60) and the programmable controller 302 achieves different temperature profiles that are the same as “at a desired rate of change” as claimed in order to automatically control operation of the power source to a temperature feedback device (see all Figures, col. 4, lines 42-51 and col. 6, line 21 – col. 8, line 31). In regard to claim 40, the programmable controller inherently performed as a recorder for the temperature data (see Figures 6-10 and col. 8, lines 32-64). In regard to claim 46 which only recites “a heating system, comprising: a controller operable to control operation of a power source electrically coupled to a heating device, wherein the controller provides a user with a menu of heating operations that may be programmed into the controller in any combination to establish a desired workpiece temperature profile” is also met by Rohrbaugh. More particularly, it shows the use of a thermal model 308 and input device 306 for inputting control data to the programmable controller 302 for controlling the heating to achieve a specific temperature profile by increasing or decreasing power input (see Figure 3 and col. 4, line 18 – col. 5, line 13). The thermal model 308 and the input device 306 are clearly the same as the claimed menu of heating operations.

Art Unit: 3742

3. Claims 46-50 are further rejected under 35 U.S.C. 102(b) as being anticipated by Harris (US 5,746,114) (newly cited).

The broadly worded claim 46 “a heating system, comprising: a controller operable to control operation of a power source electrically coupled to a heating device, wherein the controller provides a user with a menu of heating operations that may be programmed into the controller in any combination to establish a desired workpiece temperature profile” reads on any programmable cooking devices including Harris. More particularly, it shows a cooking system with a controller 25 with a remote controller 22 to control the power source and a menu of heating operations that may be programmed into the controller in any combination to establish a desired workpiece temperature profile (see col.6, lines 13-30 and Figures 1 and 9).

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-9, 11-19, 21-27, 37, 39, 40, 42 and 44-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toooh (US 4,606,529), in view of Ruget (US 3,603,130) and Yuki et al (US 5,385,200) (all are newly cited).

Toooh shows a furnace 10 for heating metal workpieces, such as billets or slabs including a programmable processor controller 400 operable to control operation of the heating rate of the heating elements 110, wherein the controller is operable to receive programming instructions to

Art Unit: 3742

selectively increase and decrease workpiece temperature and a temperature feedback device operable to provide the controller with an electrical signal representative of the workpiece temperature by temperature sensors 120, 220, 320. At col. 2, lines 3-66, it teaches that adjustments of the heating rate of the gas burner is made by modifying the programs according to the deviation of the measured temperatures from the from the program (see also Figures 1-3 and col. 3, line 26 – col. 6, line 35). It uses a furnace with burners instead of an electrical heating device such as an induction heater. Ruget shows that it is well known to use either an induction heating elements or gas burners for heating metal workpieces such as billets (see Figure 3 and col. 4, lines 6-21). Yuki also shows the use of an induction heating device 34 with a programmable controller 36 to control the heating temperature of a metal workpiece with a temperature sensor 40. It teaches that the induction heater 34 may be replaced by other heating device utilizing an electric energy or a burner or other heating device utilizing a thermal energy or a fuel, *provided such heating device is capable of regulating the amount of heat generated* (see Figure 1 and col.16, lines 31-40). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Toooh to use any well known heating device including an electrical induction heating device instead of a gas burner for the well known advantages of induction heating devices, such as, cleaner operation and more efficient heating of only the metal workpieces, in view of the teaching of Ruget and Yuki. The exact heating profile would have been a matter of engineering expediency depending on the workpiece characteristics, including the material and the heat treatment process and the power source capabilities and can be easily determined by an ordinary artisan through routine experimentation. In regard to claims 3 and 4, the exact temperature obviously depends on the type of heat treatment process, as the

Art Unit: 3742

use of induction heating for stress relief of metal workpieces is well known in the art. Most importantly, the programmable controllers of these references are also “operable” to do all the intended control steps/functions as claimed. In regard to claims 13, 15, 17-19, 44 and 45, the use of disc drives, visual display and interface modules is well known in the art of computerized controlling devices.

6. Claims 10 and 43 rejected under 35 U.S.C. 103(a) as being unpatentable over Toooh (US 4,606,529), in view of Ruget (US 3,603,130) and Yuki et al (US 5,385,200), as applied to claims 1-9, 11-19, 21-27, 37, 39, 40, 42 and 44-50 above, and further in view of Jancosek et al (US 4,845,332) (previously cited).

Toooh combined with Ruget and Yuki shows every feature as claimed except for the use of PID temperature controllers. Jancosek shows that it is well known in an induction heating system having induction heaters 34-44 to use a plurality of temperature sensors, such as pyrometers 201, 203 and 205 with PID controllers 218, 219 and 220 in a programmable microprocessor 234 for controlling the heating temperature profile according to the feedback temperature information (see Figure 1A and col. 10, line 27 – col. 11, line 7). It would have been further obvious to one having ordinary skill in the art at the time the invention was made to modify Toooh combined with Ruget and Yuki to use any well known temperature control devices including PID controller for more precise heating control according to the heating temperature feedback data, in view of the teaching of Jancosek.

Art Unit: 3742

7. Claims 20 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toooh (US 4,606,529), in view of Ruget (US 3,603,130) and Yuki et al (US 5,385,200), as applied to claims 1-9, 11-19, 21-27, 37, 39, 40, 42 and 44-50 above, and further in view of Fox et al (US 5,266,764) (previously cited).

Toooh combined with Ruget and Yuki shows every feature as claimed except that the controller is portable. Fox shows that it is well known in an induction heating system having induction heater 12 to use a portable unit 20 including a temperature controller and a power supply (see Figures 1 and 3 and col. 3, line 48 – col. 4, line 60). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Toooh combined with Ruget and Yuki to use a portable control unit so that it can be adapted for various heating systems, in view of the teaching of Fox.


8. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection. Furthermore, claims 39, 40 and 46-50 do not define over Rohrbaugh as these claims do not require induction heating (see the specific reasons set forth above).

Art Unit: 3742

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Philip H Leung whose telephone number is (571) 272-4782.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans can be reached on (571) 472-4777. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Philip H Leung
Primary Examiner
Art Unit 3742

P.Leung/pl
3-18-2005